The Comanches

142 are medium in stature. Goldstein reported an average height of five feet, six inches for Comanche men and five feet for women.[4] This [141] makes them slightly taller than their Ute and Shoshone relatives. The men are robust and well proportioned, but the idle and well-fed among them are inclined to be fat and paunchy. Their chests are wide and fairly deep, and they carry themselves erect and with unassuming [145] dignity. Possibly because of their hard life, the women age somewhat prematurely.

The skin color of the Comanche varies from light brown to a reddish brown or copper, depending to some degree on the amount of exposure to weather and sunlight. The females tend toward somewhat lighter pigmentation than do the males. Like that of any Indians, the hair of a Comanche is black and straight and medium in texture. Among the females there is a greater tendency toward coarse- [145] ness. It is a rare Comanche who has cause to worry over baldness or graying in old age. Such facial hair as a Comanche naturally grows is [302] sparse and light, but until recently even this feeble growth had little chance, for it was the style to pluck it out, roots and all—eyebrows included.

On their heavy bodies the average Comanches carry relatively [141] large, round heads with a cephalic index of eighty-three. This gives them a somewhat greater relative head breadth than neighboring Plains tribes and the Shoshones, too. The shift from the Shoshone norm may quite possibly be the result of extensive admixture with Mexican Indian captives. The forehead is broad, and the supraorbital ridges vary from slight among the females to moderate in the cases of males.

Eye color varies from medium brown to black like that of all Mongoloids. The eyes of the children are a much clearer, richer brown than those of adults. The sclera of adults is commonly bloodshot, and, contrary to popular notions about sharp-eyed Indians, the vision ap-

[4] Marcus S. Goldstein, "Anthropometry of the Comanches," *American Journal of Physical Anthropology*, Vol. XIX, (1934–35), 289–313. Goldstein's study is the best account of the physical appearance of the Comanches. It was made in 1931 and comprised thirty-five "unmixed" males, twenty-five "unmixed" females, and twenty-five hybrid individuals representing every surviving important band. The numerical figures and comparisons used in this description are taken from Goldstein's study. Otherwise, the description is based on field notes taken by Ernest Wallace in 1945.

3: Wallace & Hoebel E-4, 5 (1933, 1945) 1952
NO6 Comanche NO6

pears to be weak. The eyes of about one-half of those studied by Goldstein appear to be slanted slightly to moderately. In most cases the outer canthi are inclined upward, but a few were observed with a downward slant. The so-called Mongolian fold is common among children, but disappears in most cases by the time adulthood is reached.

The Comanche face is broad, even for an Indian people. Goldstein asserts that "In this respect the Comanches are probably exceeded by few or no other tribe." On this wide visage is a broad, high, and long nose with an index of 69.4 as compared to 67.5 for old American whites. In breadth it exceeds that of the Sioux and the Indians of the Southwest, but is practically the same as that of the Shoshones. The depression of the root of the nose is shallow to medium in depth, and the bridge is straight to moderate. The mouth is moderately wide, and the lips are thin. The lower jaw appears to be moderately developed; the chin firm and of medium prominence. All in all, the Comanche exhibits not a "finely sculptured" visage, but rather a heavy face with fairly massive features. In form as well as in personality he is a rugged individual.

Since their arrival in the South Plains, the Comanches have incorporated great numbers of Mexican captives into their tribe, and Mexican infiltration continues today at a rapid pace. Mixture with the Negro seems to have occurred with extreme rarity, if at all. Clark Wissler found that only 62.9 per cent of the Comanches were "full-blood" in 1910, as compared to 96.9 per cent of the Wichitas and 24.2 of the Iowas, the two tribes having respectively the greatest and least amount of alien admixture.[5] That this admixture has continued at an accelerated pace is shown by Marcus S. Goldstein, who believed in 1931 that not more than 10 per cent of the adults could, with any assurance, be considered fullblood.[6]

The Comanches are members of the Uto-Aztekan language family in the sense that English-speaking peoples are Indo-European. The Uto-Aztekan family, which is one of the truly great linguistic stocks of ancient North America, has three major branches: Shoshonean, Sonoran, and Nahuatlan. The Shoshonean peoples, whose home is centered in the Great Basin region of what is now western United

[5] Clark Wissler, *North American Indians of the Plains*, 148.
[6] Goldstein, "Anthropometry of the Comanches," *loc. cit.*, 290.

4: Goldstein D-5 (ca. 1930)1934
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Miscellaneous. The body build of the Comanches is inclined to corpulency, perhaps even more today than in Catlin's time. The hands appeared small but well formed. Several instances were noted where the second toe of the foot was distinctly longer than the first or big toe. 142

The health of the Comanches seemed not particularly good. Trachoma is endemic, with actual blindness or badly impaired vision frequent. Rheumatism, venereal diseases, and tuberculosis were other common complaints. 164

Relative to mentality, Richardson ('27, p. 72) says, "the Comanches were not a dull people. In native ability their chiefs were a match for the keenest minds of the white men." Mooney appraises them as 'practical and businesslike.' Although the present writer's sojourn with the tribe was very brief, he can emphatically confirm the judgments of the aforementioned observers. Joking or bantering proclivities seemed also a widespread characteristic. 157 [522]

MEASUREMENTS[a]

Stature. The average stature of the Comanches, according to the writer's data, is 168.3 cm. for males and 156.1 cm. for females. These averages are quite close to those reported by Boas (1895 a, males 167.8 cm., females 156.2 cm.), being practically identical in the females. A significant likeness, too, appears in the gross distribution of the two series, namely, approximately one-fourth, respectively, being short (below 166 cm.), and tall (above 173 cm.). 141

	Males	
	Under 166 cm., per cent	Over 173 cm., per cent
Comanche		
Goldstein	29.4	23.5
Boas	24.4	27.1
Apache and Navaho (Boas, 1895 a)	23.7	25.3

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[a] It may be mentioned that the percental distributions of the characters measured, not included here, were, despite the small numbers, as a rule of remarkably even spread, i.e., conforming to the normal distribution curve. The averages, minima and maxima of the various characters are appended at the end.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

141 171 Fairly close similarity of average statures is also noted between the Comanche, Shoshoni, and Apache.

Stature

GROUP	MALES		FEMALES	
	Number of subjects	Stature	Number of subjects	Stature
		cm.		cm.
Comanche (Goldstein)	(17)	168.3	(25)	156.1
Shoshoni (Boas, 1899)	(42)	166.5	(21)	152.8
Apache (Hrdlička, '09)	(212)	169.1	(70)	156.8

Arm-spread. The mean excess of arm-spread over stature is rather large in the males, 7.7 cm. and 6.9 cm. for full- and probable full-bloods, respectively. The arms of the females are relatively, as well as absolutely, shorter, showing an average stature-span index of 102.2 as compared with the male 104.5. The arm-span was slightly less than stature in only two instances among the males, but was not infrequently in the females.

The Shoshoni[14] (Boas, 1899) approach very closely the Comanche in relative length of arms, giving indices of 104.3 and 103.3 for males and females, respectively. The Apache, on the other hand, apparently differ materially in this respect from the Comanche, yielding indices of 100.6 for each sex.

Height sitting. The Comanche stem length (males, 88.25 cm.) appears intermediate between the Apache (90.3 cm.) and the Shoshone (86.7 cm.). Relative to total height, the averages of 52.3 per cent in the males and 52.8 per cent in the females, are very close to the Shoshoneans (52.2 per cent and 52.7 per cent, respectively). The Apache males have relatively somewhat longer upper bodies (53.2 per cent of stature), but the females (52.8 per cent) are in this feature identical with the Comanches.

[14] Some measurements on males are available for the Shoshoni proper; others, including all the female data herein used, are available only for a combined group of Shoshonean bands (Boas, 1899); in the following, 'Shoshone' will refer to the latter.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

The sitting height of the probable full-bloods averages 89.58 cm., and this is 52.89 per cent of total height; absolutely and relatively, therefore, they have longer upper bodies than the full-bloods.

Head measurements. The head of the Comanche is free from artificial deformation. It is fairly long, but also quite broad. The vault, taken from the base of the biauricular line to bregma, is low, as low as that of the Apache. No data for this latter feature is available on the living Shoshone, although skull measurements indicate a low vault (Hrdlička, '27).[15]

Head dimensions

GROUP	NUMBER OF SUBJECTS	HEAD LENGTH	HEAD BREADTH	HEAD HEIGHT
		Males		
		cm.	cm.	cm.
Comanche	(18)	19.17	16.03	13.47
Shoshoni	(43)	19.35	15.31	....
Apache	(146)	18.7	15.8	13.5
		Females		
Comanche	(25)	18.53	15.24	13.23
Shoshoni	(26)	18.43	14.62	....
Apache	(41)	17.5	15.5	13.0

Cephalic module. ($\frac{L. + B. + H.}{3}$) The cephalic module or mean diameter of the head, as seen below, shows the Comanche intermediate between the Apache and the Sioux. The female to male relationship in this feature is virtually alike in Comanche (96.0) and Sioux (96.7). The head of the Comanche is large; indeed, relative to stature, it is probably as large as that of any North American tribe.

[15] Dr. Truman Michelson's unpublished data on the Wind River Shoshoni confirm this.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

Head module and stature

GROUP	MALES				FEMALES			
	Module		Module × 1000 / Stature		Module		Module × 1000 / Stature	
	Number of subjects	Average	Number of subjects	Average	Number of subjects	Average	Number of subjects	Average
		cm.				cm.		
Comanche	(18)	16.22	(17)	96.4	(25)	15.67	(25)	100.4
Sioux (Hrdlička, 31 a)	(72)	16.40	(72)	94.8	(36)	15.86	(36)	99.7
Apache	(174)	16.00	(167)	94.0	(41)	15.35	(41)	97.9

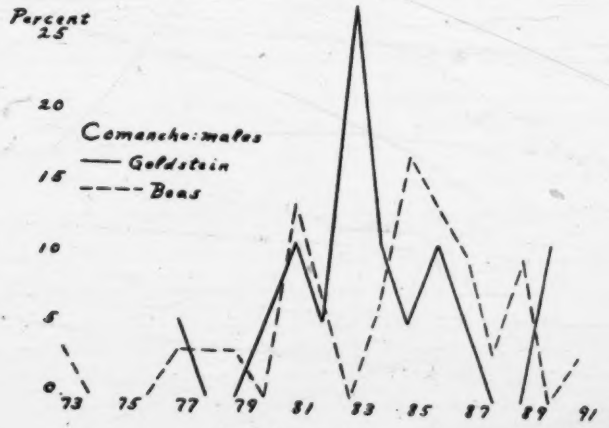

Fig. 1 Cephalic index.

Cephalic index. The form of the head of the full-blood Comanches ranges from meso- to strong brachycephaly, with an average index of 83.7 for males and 82.25 for females. The writer's average for the males is fairly close to that reported by Boas for the same sex (see below); no index for females was mentioned by the latter. More detailed comparison with Boas' data is presented graphically (fig. 1). In

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

general outline the two series appear very similar. The curve according to Boas' data, however, is flatter, suggesting greater variability. A difference also exists in the modal or most frequent index, occurring at 85 in the Boas curve, and at 83 in the writer's.

This tendency toward a greater proportion of decided brachycephaly in the Boas series is likewise illustrated by the distributions below.

Comanche males

	Number of subjects	Average	Under 79 per cent	Over 84 per cent
Goldstein	(18)	83.7	5.6	33.3
Boas	(29)	84.6	10.2	65.3

Both series are small and this inadequacy of numbers probably accounts in a large measure for the difference in the distributions, although cognizance must also be taken of the possibility of the presence of some mixed blood in the Boas series.

Boas further gives a cranial index of 80.0 for fifteen Kiowa and Comanche combined skulls.

The Comanches, according to both Boas and the writer, are definitely brachycephalic, and in this important respect are quite different from the equally definitely mesocephalic Shoshoni.[16] The Apache, Caddo, Kiowa, and Navaho appear related to the Comanche in head form.

Cephalic index, males

GROUP	NUMBER OF SUBJECTS	CEPHALIC INDEX
Apache (Hrdlička, '08)	(148)	84.9
Comanche (Boas, 1895 a)	(29)	84.6
Comanche (Goldstein)	(18)	83.7
Navaho (Hrdlička, '31 b)	(28)	83.7
Caddo (Boas, 1895 a)	(36)	83.5
Kiowa (Boas, 1895 a)	(40)	82.0
Shoshoni	(43)	79.1

[16] See also T. Michelson. Note on Shoshoni Anthropometry. Proc. 23rd Internat. Cong. Americanists, N. Y., 1928, p. 856.

4: Goldstein D-5 (ca. 1930)1934
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Height indices. The height of the vault relative to length and breadth of the head is seen to be rather low in the males, but fairly high in the females. Relative to the mean of length and breadth of head, probably a more clear-cut index, the height in the males averages lower than that of the Apache, and is as low as that of the Sioux; the females again, however, show good height.

Head height indices

GROUP	MALES				FEMALES			
	Number of subjects	Height-length index	Height-breadth index	Mean[2] height index	Number of subjects	Height length index	Height-breadth index	Mean[2] height index
Old U. S. Whites[1]	?	70.0	89.5	79.2	?	71.0	89.5	79.7
Apache	(148)	72.1	84.9	78.3	(41)	74.6	84.1	78.8
Comanche	(18)	70.4	84.0	76.6	(25)	71.5	87.0	78.5
Sioux	(72)	68.1	86.3	76.1	(36)	68.6	84.7	75.8

[1] These and other figures following for the Old U. S. Whites are taken from Hrdlička's 'Old Americans' ('25) and from abstracts of the same data in his 'Anthropology of the Sioux' ('31).

[2] Height: length + breadth.

Dimensions of the face. The facial dimensions corroborate the impression of largeness obtained by inspection. The length below the forehead compares favorably with that of the Sioux, and exceeds this diameter in the Apache and Shoshoni; the total length is not so great, indicating a low forehead.

The breadth of the face is astonishingly large even for an Indian people; the Comanches in this respect are probably exceeded by few or no other tribes.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

Dimensions of the face

GROUP		MALES			FEMALES		
		Menton-nasion	Menton-crinion	Diameter bizygomatic maximum	Menton-nasion	Menton-crinion	Diameter bizygomatic maximum
Sioux	Number of subjects	†	†	†	†	†	†
	Average (cm.)	12.84	19.42	15.1	11.97	18.07	14.6
Comanche	Number of subjects	(18)	(14)	(19)	(25)	(24)	(25)
	Average (cm.)	12.67	18.71	15.44	11.98	17.76	14.68
Shoshoni	Number of subjects	(42)	....	(43)	(21)	....	(26)
	Average (cm.)	11.88	....	14.82	10.85	....	13.69
Apache	Number of subjects	(174)	....	(174)	(51)	....	(51)
	Average (cm.)	11.8	....	14.9	10.8	....	14.1
Indians of the Southwest and northern Mexico	Number of subjects	....	†	....	....	†	....
	Average (cm.)	....	18.46	....	....	17.23	....

Facial indices. Although absolutely long, the face below the forehead is relatively to the breadth only moderate, the males in this respect approaching the Indians of the Southwest and northern Mexico; the females in this feature are closest to the Sioux.

The physiognomic index is noteworthy for indicating great relative broadness.

4: Goldstein D-5 (ca. 1930)1934
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Facial indices

GROUP		MALES		FEMALES	
		Morphologic index	Physiognomic index	Morphologic index	Physiognomic index
Sioux	Number of subjects	?	?	?	?
	Average	85.1	77.4	81.9	80.8
Indians of the Southwest and northern Mexico	Number of subjects	?	?	?	?
	Average	82.2	77.7	82.1	78.7
Comanche	Number of subjects	(18)	(14)	(25)	(24)
	Average	82.1	82.1	81.6	82.6
Shoshoni	Number of subjects	(42)	....	(21)	....
	Average	80.1	....	79.2	....
Apache	Number of subjects	(174)	....	(51)	....
	Average	78.8	....	76.4	....

Height and breadth of forehead. The average height of forehead among the Comanches is very low, especially that of the males. This metrical lowness is in contrast to the more medium height noted by inspection.

The average minimal frontal diameter of the forehead is seen in both sexes to be almost like that of the Sioux. A rather unusually low variability occurred in this character among the males.

Forehead

GROUP		MALES		FEMALES	
		Height of forehead	Minimum frontal diameter	Height of forehead	Minimum frontal diameter
Indians of the Southwest and northern Mexico	Number of subjects	?	?	?	?
	Average (cm.)	6.66	10.41	6.12	10.17
Sioux	Number of subjects	?	?	?	?
	Average (cm.)	6.48	10.64	5.93	10.30
Comanche	Number of subjects	(14)	(19)	(24)	(25)
	Average (cm.)	6.05	10.69	5.71	10.29
Old U. S. Whites	Number of subjects	(148)	(247)	(207)	(210)
	Average (cm.)	6.58	10.59	6.45	10.12

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

Breadth of lower jaw. The gonio-frontal index is used by Hrdlička to indicate relative breadth of the lower jaw. The Comanches have a moderately wide mandible, much less developed in width than the Sioux, but in the males almost identical with the Indians of the Southwest and northern Mexico.

GROUP	MALES			FEMALES		
	Number of subjects	Bigonial diameter	Gonio-frontal index[1]	Number of subjects	Bigonial diameter	Gonio-frontal index[1]
		cm.			cm.	
Sioux	?	11.5	92.7	?	11.0	93.6
Comanches	(19)	11.08	96.48	(25)	10.66	96.51
Indians of the Southwest and northern Mexico	?	10.79	96.5	?	10.15	100.2
Old U. S. Whites	(247)	10.63	99.1	(210)	9.84	103.0

[1] Minimum frontal diameter × 100: bigonal diameter.

The nose. The nose of the Comanche appears unusually long, showing a greater average length than any of the compared peoples.

In breadth, too, the nose is generous, perceptibly exceeding the averages of the Sioux and the Indians of the Southwest and northern Mexico, but appearing practically like that of the Shoshoni.

Nose

GROUP	MALES				FEMALES			
	Number of subjects	Length	Breadth	Index	Number of subjects	Length	Breadth	Index
		cm.	cm.			cm.	cm.	
Shoshoni	(42)	5.27	4.30	81.6	(26)	4.95	4.01	85.1
Indians of the Southwest and northern Mexico	?	5.18	4.15	80.4	?	4.8	3.78	78.6
Sioux	?	5.94	4.18	70.4	?	5.45	4.04	74.1
Comanche	(19)	6.28	4.36	69.4	(25)	5.75	3.98	69.17
Old U. S. Whites	(247)	5.35	3.61	67.5	(210)	4.94	3.25	65.98

The resulting nasal index is leptorrhinic, which in this instance does not so much signify narrowness as unusual height.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

The apparently unusual height of the nose, combined with the previously indicated long lower face (nasion to chin), and seeming unusually low forehead, may suggest that the nasion was judged higher than the actual. The precise determination of nasion is admittedly difficult, and the possibility of a small constant error must be recognized. It may be mentioned, however, that a large number of photographs of Comanches were carefully scrutinized, according to which, in general, the nose did appear quite long, tending to confirm the metric data.

The mouth. The Comanches possess a moderately wide mouth, though a large face. The comparative data are self-explanatory.

Breadth of mouth

GROUP	NUMBER OF SUBJECTS	MALES	NUMBER OF SUBJECTS	FEMALES
		cm.		cm.
Sioux	?	6.30	?	6.16
Indians of the Southwest and northern Mexico	?	5.85	?	5.49
Comanche	(19)	5.76	(25)	5.69
Old U. S. Whites	(247)	5.37	(210)	4.95

The ear. Upon inspection the ear of the Comanches appeared strikingly long and rather narrow. The metric data indicate that both dimensions, especially in the males, are large, being distinctly greater than those of the Sioux, Shoshone, or Old U. S. Whites. The low index shows plainly the great relative length of the ear and explains the impression of narrowness notwithstanding good width.

Ear

GROUP	MALES				FEMALES			
	Number of subjects	Length	Breadth	Index	Number of subjects	Length	Breadth	Index
		cm.	cm.			cm.	cm.	
Comanches	(19)	7.63	3.99	52.38	(25)	7.08	3.66	51.75
Sioux	?	7.33	3.93	53.6	?	7.05	3.76	53.3
Old U. S. Whites	(247)	6.69	3.79	56.7	(210)	6.10	3.47	56.9
Shoshone	(45	6.52	....	....	(11)	6.10	....	....

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

The chest. The Comanches, although a shorter people than the Sioux, approach the latter in dimensions of the chest, especially in breadth. The average index indicates a relatively deep chest, but does not quite reach the splendid depth of the Sioux; it shows to greater advantage however than those of the Indians of the Southwest and northern Mexico or Old U. S. Whites.

Chest, males

GROUP	NUMBER OF SUBJECTS	BREADTH	DEPTH	INDEX
		cm.	cm.	
Sioux	?	31.92	26.0	81.4
Comanche	(16)	31.51	24.5	77.76
Indians of the Southwest and northern Mexico	?	29.9	22.8	76.15
Old U. S. Whites	(246)	29.76	21.7	72.93

Left hand. The metric data corroborates a visual observation, namely, the remarkably small hand of the Comanche. It is, however, well proportioned, giving a length-breadth index very similar to that of the Sioux and the Old U. S. Whites.

Left hand, males

GROUP	NUMBER OF SUBJECTS	LENGTH	BREADTH	INDEX
		cm.	cm.	
Comanche	(17)	17.91	8.51	47.52
Indians of the Southwest and northern Mexico	?	18.53	8.51	45.9
Old U. S. Whites	(247)	19.28	9.18	47.64
Sioux	?	19.83	9.43	47.6

The left foot. The foot of the males, according to the data below, shows nothing distinctive; in both dimensions and in the somewhat large relative breadth it resembles the foot of the Indians of the Southwest and northern Mexico.

4: Goldstein D-5 (ca. 1930)1934
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Left foot, males

GROUP	NUMBER OF SUBJECTS	LENGTH	BREADTH	INDEX
		cm.	cm.	
Indians of the Southwest and northern Mexico	?	25.42	10.15	37.91
Comanches	(14)	25.99	10.05	38.68
Old U. S. Whites	(245)	26.12	9.45	36.33
Sioux	?	26.8	9.93	37.1

'PROBABLE' FULL-BLOODS

These individuals, it will be recalled, could not be as certainly diagnosed with respect to possible mixture as the full-bloods, and were therefore considered 'probably' full-blood.

The metric data clearly show tangible and fairly consistent differences between this group and the full-bloods, although the differences between the means of several important measurements and indices (stature, head height, cephalic index) were found to be statistically not significant;[17] the numbers concerned, however, are probably too small for statistical refinement. On the other hand, the writer could not conscientiously classify this group with the mixed-bloods, for, as seen below, they appear almost as divergent from the mixed- as from the full-bloods. If mixture of blood is present, it is probably not very recent, in so far as mixture in these individuals was apparently unknown to the members of the tribe and, according to their outward physical appearance, would seem to have been primarily with other Indian groups. Whether a larger series would materially affect the averages is, of course, problematical.

In short, the probable full-bloods appear to be an aberrant group, resembling in physiognomy and shape of head the Sioux, but in stature, and especially in high vault of head, approaching the Navaho.

[17] Difference between the means being less than four times $\sqrt{a^2 + b^2}$ where a and b equal the probable error of the first and second means, respectively.

4: Goldstein D-5 (ca. 1930)1934
NO6 Comanche NO6

Comparison of full-, probable full- and mixed-blood males[1]

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MEASUREMENT	FULL-BLOOD		PROBABLE FULL-BLOOD		MIXED-BLOOD	
	Number of subjects	Average	Number of subjects	Average	Number of subjects	Average
Stature	(17)	168.29	(15)	169.22	(23)	169.11
Sitting height index	(16)	52.3	(13)	52.89	(15)	52.17
Cephalic index	(18)	83.74	(16)	80.35	(23)	82.59
Head height	(18)	13.47	(16)	13.84	(24)	13.66
Head module	(18)	16.22	(16)	16.41	(24)	16.20
Mean height index	(18)	76.56	(16)	78.48	(23)	78.2
Face: Menton-nasion	(18)	12.67	(16)	12.46	(22)	12.59
Menton-crinion	(14)	18.71	(14)	18.74	(19)	18.42
Bizygomatic diameter	(19)	15.44	(16)	15.28	(22)	14.98
Index, morphologic	(18)	82.05	(16)	81.51	(22)	84.01
Index, physiognomic	(14)	82.05	(14)	81.97	(19)	81.14
Nose: Index	(19)	69.49	(16)	74.61	(22)	68.88

[1] All figures except indices are in centimeters.

DISCUSSION

The traditional close and friendly contact of the Comanche with the Shoshoni, each speaking the same language and apparently possessing no social barriers to free intermarriage, would seem to have made some miscegenation between the two peoples very likely. At the same time, however, any closer physical relationship than possible occasional intermarriage, seems doubtful, considering the fundamental difference of head form in the two groups—the Comanche definitely bracycephalic, the Shoshoni, and other Shoshonean tribes of the northern plateaux, definitely mesocephalic. The only Shoshonean groups similar to the Comanches in average stature and cephalic index are those of southern California (Boas, 1895 b). Even these, however, differ from the Comanches in the important character of shape and probably relatively greater breadth of the nose.[18]

The Comanches, in the light of their history, are undoubtedly a complex group physically; they are mixed to a greater or lesser extent probably with all the many and varied tribes

[18] "The nose is very often concave, rather short, but wide with thick alae." (Boas, 1895 b, p. 269.)

Summary of Comanche measurements[1]

	FULL-BLOOD						PROBABLE FULL-BLOOD		
	Male			Female			Males		
	Number of subjects	Average	Range	Number of subjects	Average	Range	Number of subjects	Average	Range
Stature (Goldstein)	17	168.29	158.0 –177.0	25	156.1	145.5 –165.0	15	169.22	158.5 –180.5
(Boas)	74	167.8			156.2				
Arm-span minus stature	13	+7.7	+16.0 – –2.0	21	+4.4	+17.0 – –9.5	14	6.9	16.0 – 0.5
Span-stature index	13	104.5		21	102.2		14	104.0	
Height sitting	16	88.25	83.5 – 93.5	23	82.6	77.5 – 91.0	13	89.58	82.0 – 98.0
Height-sitting index	16	52.3	50.3 – 54.5	23	52.8	49.7 – 56.9	13	52.89	51.1 – 54.3
Head: length	18	19.17	17.7 – 20.3	25	18.53	17.6 – 19.6	16	19.62	18.6 – 20.5
breadth	19	16.03	15.3 – 17.1	25	15.24	14.4 – 16.0	16	15.76	14.4 – 16.8
height	18	13.47	12.8 – 14.6	25	13.25	12.3 – 14.2	16	13.84	12.5 – 15.2
module	18	16.22	15.27– 17.03	25	15.67	14.97– 16.30	16	16.41	15.37– 16.97
Module vs. stature	17	96.4	91.2 –106.3	25	100.4	95.8 –106.5	15	96.9	91.6 –102.3
Cephalic index (Goldstein)	18	83.74	76.9 – 90.4	25	82.25	75.8 – 89.9	16	80.35	72.7 – 88.4
(Boas)	29	84.6							
Height-length index	18	70.38	65.5 – 77.7	25	71.52	65.3 – 78.9	16	70.56	64.0 – 78.7
Height-breadth index	18	83.99	78.7 – 90.3	25	86.96	80.6 – 93.3	16	87.83	79.2 – 97.4
Mean height index	18	76.56	71.5 – 83.5	25	78.48	72.6 – 84.5	16	78.25	71.9 – 86.4
Face: menton-nasion	18	12.67	11.4 – 13.8	25	11.98	10.4 – 13.3	16	12.46	10.8 – 13.4
menton-crinion	14	18.71	16.7 – 19.9	24	17.76	16.0 – 18.6	14	18.74	16.8 – 20.6
Maximum bizygomatic diameter	19	15.44	13.9 – 16.4	25	14.68	14.0 – 15.2	16	15.28	14.0 – 16.4
Facial indices: morphologic	18	82.05	73.1 – 87.7	25	81.58	69.3 – 89.3	16	81.51	73.0 – 91.4
physiognomic	14	82.05	77.4 – 87.2	24	82.61	75.3 – 92.1	14	81.97	74.5 – 88.1
Forehead, height	14	6.05	4.8 – 7.2	24	5.71	4.0 – 7.1	14	6.36	5.9 – 7.5
Minimum frontal diameter	19	10.69	10.2 – 11.2	25	10.29	9.4 – 11.1	16	10.56	10.0 – 12.1
Bigonial diameter	19	11.08	9.6 – 12.4	25	10.66	10.1 – 11.5	16	11.19	9.5 – 12.1
Gonio-frontal index	19	96.48	85.4 –108.3	25	96.51	84.2 –105.9	16	94.36	85.0 –107.4
Nose: length	19	6.28	5.6 – 7.0	25	5.75	5.1 – 6.5	16	6.0	5.3 – 7.3
breadth	19	4.36	3.6 – 5.1	25	3.98	3.5 – 4.7	16	4.48	3.8 – 5.4
index	19	69.49	56.1 – 87.9	25	69.17	59.3 – 88.7	16	74.61	63.1 – 87.1
Mouth breadth	19	5.76	4.6 – 6.6	25	5.69	5.0 – 6.7	16	5.87	5.0 – 6.6
Left ear: length	19	7.63	6.6 – 8.8	25	7.08	6.2 – 7.8	16	7.56	6.7 – 8.5
breadth	19	3.99	3.2 – 4.9	25	3.66	3.3 – 4.0	16	3.89	3.4 – 4.2
index	19	52.38	45.5 – 67.1	25	51.75	44.2 – 59.4	16	51.45	42.0 – 80.0
Chest: width	16	31.51	26.8 – 36.0	23	30.25	26.8 – 34.2	16	32.56	28.9 – 38.3
depth	16	24.50	17.3 – 29.2	23	24.19	20.6 – 29.2	16	25.55	21.2 – 29.7
index	16	77.76	64.6 – 89.0	23	79.95	72.8 – 97.7	16	78.45	67.7 – 93.7
Left hand: length	17	17.91	15.9 – 19.9	25	17.6	15.6 – 19.0	16	18.53	16.8 – 21.3
breadth	17	8.51	6.8 – 10.0	25	8.54	6.5 – 9.5	16	9.18	7.5 – 9.9
index	17	47.52	40.5 – 52.8	25	48.54	41.7 – 51.8	16	49.53	42.9 – 53.8
Left foot: length	14	25.99	23.2 – 27.8	24	24.07	22.5 – 25.9	14	26.23	25.0 – 28.5
breadth	14	10.05	8.7 – 12.3	24	9.34	8.2 – 11.0	14	9.89	8.7 – 10.6
index	14	38.68	34.7 – 45.7	24	38.8	35.1 – 45.1	14	37.72	33.7 – 42.0

[1] All figures except indices are in centimeters.

4: Goldstein D-5 (ca. 1930)1934
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[14] with which they came in contact in their vast nomadic range. [17] On the whole, excepting a suggestion of the Sioux in their physiognomy, and of the Shoshone in body proportions, the Comanches seem to the writer, in view of their medium to tall stature, clear brachycephaly, low vault of head, and large and heavy facial features, an essentially Apache-like people.

SUMMARY

The Comanches are of medium average stature, generally of robust physique, and possess relatively long arms.

Their head is absolutely and relatively to stature large; it is meso- to decidedly brachycephalic in shape, and very low in height.

The face is very broad and probably long below the forehead; the forehead seems very low in height, but is fairly broad in width. A broad but also long nose, moderately wide mouth, and moderately developed (in width) lower jaw, completes the physiognomy. The ears are large in both dimensions, also relatively long; the chest is wide and fairly deep; the hand usually small but well formed; the foot relatively somewhat broad.

In a number of the above features, particularly stature and shape and height of head, the Comanche appear essentially related to the Apache; their decided brachycephalic would seem to preclude close physical affinity with the linguistically related mesocephalic Shoshoni.

A group of so-called probable full-bloods appears as an aberrant type, chiefly in much lower brachycephaly and high vault of head. In taller stature and high vault of head they resemble the Navaho; in their other characters they tend to approach the Sioux.

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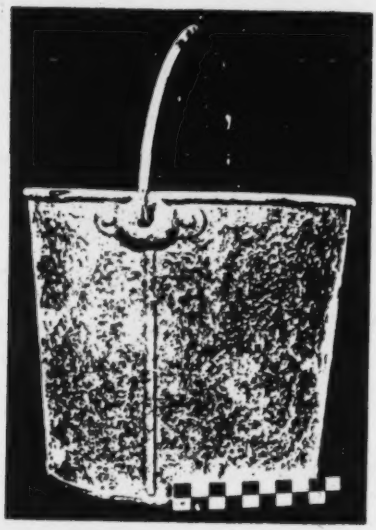

Figure 4. Galvanized pail from 34CM221.

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128 *Sex:* Table 2 shows the morphological and metric traits diagnostic of sex. Both the pelvis and the skull are typically female. A more objective assessment of sex is obtained with the discriminant function formula of Giles and Elliot (1963). The value derived from the formula, 899.02, lies on the "female" side of the sectioning point of 912.14 for American Indian crania.

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[128] *Race:* Table 2 indicates a predominately Mongoloid racial affinity. The Giles-Elliot discriminant analysis for race (1962) would classify the skull as "indeterminate" but with rather less likelihood of being white than Negro or American Indian. A possible explanation for the "indeterminate" status of the skull lies in the fact that Southern Plains tribes have long been active in assimilating non-Indian captives into their breeding populations.

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128 *Age:* Since the symphyseal facets of the pubis were largely destroyed, cranial suture were relied on for age. The mean for 16-segment closure ratings is 1.09 (Nemerski, Harsanyi, and Ascadi: 1960:95), indicating an age of 25-35 years. This estimate is partly supported by the minimal osteo-arthritic lipping of the lumbar vertebrae,

[TEXT CONTINUED ON PAGE 320-A]
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TABLE 1
SKELETAL MEASUREMENTS AND DESCRIPTION

SKULL	Millimeters or degrees
Cranium	
Maximum length	179
Maximum breadth	140
Basion-bregmatic height	124
Minimum frontal diameter	89
Bizygomatic breadth (estimate)	131
Prosthion-nasion length	66
Nasal height	51
Nasal breadth	26
Orbital height	36
Orbital breadth	39
Basion-nasion length	96
Basion-prosthion length	91
Foramen magnum length	36
Bimaxillary breadth (M2)	63
Cranial thickness (parietal)	5
Palate length	38
Palate breadth	41
Arch length	48
Facial angle	85°
Subnasal angle	75°
Biorbital breadth	98
Nasion protrusion	14
Bizygomaxillary breadth	97
Auricular head height	104
Mandible	
Total length	109
Bicondylar breadth	123
Bigonial breadth	94
Mandibular angle	119°
Ramus height	59
Ramus breadth	32
Symphyseal angle	70°
Body height	
M2	27
PM 1-2	29
Symphyseal	28
Body thickness	
M2	13
PM 1-2	11
Symphyseal	12

Cranial and Mandibular Indices and Derived Measurements

Index or Measurement	Value	Classification
Cranial index	78.2	Mesocranial
Mean height index	77.8	Low skull
Upper facial index	51.1	Mesene
Transverse facial index	93.5	Phenozygene
Transverse frontal index	80.1	Divergent
Fronto-parietal index	63.5	Sthenometopic
Fronto-zygomatic index	67.9	---
Orbital index	92.3	Hypsicouch
Nasal index	50.9	Mesorrhine
Palatal index	107.8	Brachystaphyline
Alveolar arch index	131.2	Brachyuranic

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Flower's index	94.7	Orthognathic
Facial flattening	14.4	Flat
Upper facial angle	75°	Orthognathic
Subnasal angle	75°	Mesognathic
Index of robustness (PM1-2)	37.9	—
Cranial capacity	1297 cc.	—
Mandibular index	88.6	Mesognathic
Fronto-gonic index	105.6	—
Gonio-condylar index	76.4	—
Ramus index	54.2	—
Descriptive Characters		
Vault (vertical)		Ovoid
Inion		O
Nuchal lines		Slight
Dental arch		Parabolic
Palatine torus		Absent
Metopic suture		Closed
Mandibular torus		Absent
Nasal margin		Fossicula
Vault contour (sagittal)		Platycranic
Mastoid process		Small
Pterion		"H" type
Supraorbital ridges		Slight
Vault sutures		Simple
Suture closure (mean of 16 segment closure ratings)		1.09
Chignon		Moderate

POST-CRANIAL SKELETON

Clavicle - not measured		
Scapula - not measured		
Vertebrae and sacrum - not measured		
Innominates		
Coxal height	—	196
Iliac breadth	147	146
Iliac height (cotyloid)	—	122
Ischial length	—	87
Pubic length	—	—
Sciatic notch angle	76°	77°
Sciatic notch width	—	48
Sciatic notch depth	—	27
Cotylo-sciatic breadth	32	32
Cotylo-sciatic index	—	—
Coxal breadth index	—	119.7
Iliac breadth index	—	74.5
Ischio-pubic index	—	—
Apertural index	—	56.2
Humerus		
Maximum length	300	302
Maximum diameter	19.6	20.4
Minimum diameter	15	15.1
Head diameter, vertical	43	42
Head diameter, horizontal	40	40
Bicondylar diameter	—	—
Supracondylar foramen breadth	10	—
Radius		
Maximum length	216	220
Ulna		
Maximum length	246	239

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Table 1 (continued)

Transverse diameter	18	18
Anterior-posterior diameter	21	21
Femur		
Maximum length	415	—
Physiological length	409	—
Transverse diameter	26	—
AP diameter	27	—
Subtrochanteric diameter, AP	25	—
Subtrochanteric diameter, transverse	30	—
Head diameter, vertical	45	—
Head diameter, horizontal	46	—
Bicondylar diameter (estimate)	73	—
Collo-diaphyseal angle	137°	—
Tibia		
Maximum length	322	318
AP diameter (nutrient foramen)	32	30
Transverse diameter (nutrient foramen)	22	21
Bicondylar diameter	—	70
Fibula		
Maximum length	318	—

Long bone indices	Value	Class
Diaphyseal index, humerus	75.2	Platybrachic
Brachial index (humerus/radius)	72.4	Short
Platolenean index, ulna	85.7	Uroleneal
Index of robustness, femur	13	Average
Pilasteric index, femur	103.8	Weak
Platymeric index, femur	83.3	Platymeric
Tibio-femoral index	78.7	—
Cnemial index	69.4	Mesocnemic
Humero-femoral index	73.3	—
Intermembral index	70	Average

the general texture of the bones, and the relatively unworn second and third molars.

Stature: Since there are no reliable estimates for determining female Mongoloid stature, the Trotter-Gleser table (Trotter and Gleser 1952, Table 13) for white females was used. Thirteen calculations were made; the results range from 152.78 cm. to 162.80 cm., averaging 157.31 cm. Since Mongoloids have rather shorter legs relative to trunk height than do whites, this average may be an underestimate by two to five centimeters. Goldstein (1934:299) reported an average stature of 156.1 cm. for 25 full-blood Comanche females measured in 1931. Since Indians of mixed blood almost always exhibit maximum dimensions greater than full-bloods, the skeleton would fit into the range of variation expected for either the full-blood or the mixed blood population.

Cultural status: The heavy dental attrition indi-

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TABLE 2
TRAITS INDICATIVE OF
SEX, RACE, AND CULTURE STATUS

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Trait	Sex		Culture		Race		
			Primitive	Modern	Negroid	Caucasoid	Mongoloid
Skull and Mandible							
Metopism		x				x	x
Low Vault			x				
Cranial Capacity		x					
Chignon							x
Mylohy							x
Phenozygomy			x				x
Sthenometopia					x		x
Frontozygomatic Index					x		x
Hypsicephaly		x					x
Metopism							x
Brachystaphylinie							x
Brachystomy						x	x
Orthognathy (Upper Face)		x				x	x
Mesognathy (Alveolar)		x					x
Facial Flatness							x
Nuchal Crests		x					
Mastoid Processes		x					
Supraorbital Ridges		x					
Arch Form		x				x	x
Molar Form							x
Premaxillary Sutures							x
Dental Wear			x				
Shovel-shaped Incisors							x
Edge-to-Edge Bite			x				
Mandibular Index					x	x	
Fronto-gonic Index			x				
Gonio-Condylar Index						x	x
Ramus Index							x
Gonial Angle		x					x
Symphyseal Angle							x
Simple Sutures					x		x
Post-Cranial							
Humeral Head Diameter		x					
Platybrachia							x
Supracondylar Foramen Breadth		x					x
Brachial Index						x	
Tricipital		x					x
Ulnar Breadth Index		x					
Sciatic Notch Angle		x					
Acetabular Index		x					
Pilaster Vulgum		x					
Acromion Diameter Femur		x					
Index of Robustness							x
Pilasteric Index		x				x	
Platymeria			x			x	
Platycnemia		x					x
Squatting Facets			x				

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cates a coarse diet with much gritty contamination. This wear is relatively greater in the anterior dental arcade, indicating some use of the teeth in preparing hides, cordage, etc. At least one tibia shows the presence of squatters facet, and the femurs are platymeric. Both conditions are indicative of primitive living.

Conclusions: The osteological evidence thus indicates an adult female Plains Indian, 25-35 years old, who lived at a time before acculturative shifts in diet would reduce tooth wear. Although the observations fit the data given by Goldstein (1934), it is not possible to assign the skeleton definitely to the Comanche because of the limited sample on which the comparison was based.

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